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Tuesday, December 13, 2005

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12/13/05
Date

Witnessed in my presence this day of

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実用新案登録願 (1)

昭和 50 年 10 月 22 日

特許庁長官 斎藤英雄 殿

1. 考案の名称 ラチエラチングスパナ付トルクレンチ

2. 考案者

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氏 名 (法人にあつては名称) 株式会社中村製作所

代表者 石 森 晴

4. 添付書類の目録

- | | | |
|-----|---------|-------|
| (1) | 明 細 書 | 1 通 |
| (2) | 図 面 | 1 通 |
| (3) | 願 書 副 本 | 1 通 |
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50-144764

明 細 書

1 考案の名称 ラチエツチングスパナ付トルクレンチ

2 実用新案登録請求の範囲

締付部材を把手部材の端部で成程度回動可能に軸着し、締付部材の一端に一面1、とこれに連続する凹面1、をもつ固定ジョウ1、を形成し、前記固定ジョウの一面1、とはほぼ平行な面3、とそれぞれ120°をなす面3、および3、との間に、それぞれ凹面3、および3、を連続して形成した回動ジョウ3に設けたみぞ3、に固定ジョウを軸4で成程度回動可能に係合せしめ、前記固定ジョウおよび回動ジョウが外側面1、から突出した部分1、と3、に固定した軸3および7との間に引張ばね8を張架せしめたラチエツチングスパナ付トルクレンチ。

3 考案の詳細な説明

本考案はラチエツチングスパナを装荷したトルクレンチの構造に関する。

2箇の固定ジョウからなるスパナを締付部材の一端にもつトルクレンチは公知であるが、いわゆるボルト又はナットの予備的な締め付けを行うには、初めの位置からナットなどに成程度の回転角をあたえた後一旦スパナをナットなどから離脱させ再び、ある程度の回転角をナットなどにあたえ得るようスパナをナットに係合させる動作を反復する必要がある。迅速な締付作業ができない上に最終締付トルクを正確にナットにあたえ得ない場合もナットとスパナの相対的な位置関係から生ずる欠点があつた。

前記の締付作業性の欠点の改善を目的とするものとして、固定

ジョウのナットに嵌合する部分に、ラチェツチングが可能ないように適当な逃げ部をもつたスパナが多数提案されているが、ラチェツチングの際、スパナの2箇の対向する固定ジョウの中間にある中心をナットなどの中心となおし締付中心から疎隔度ずらすようにスパナを操作する必要がある、操作量が多いときは、ナットなどからスパナが離脱するから、再びスパナをナットに嵌合しなおして締付けを続行する必要がある、円滑なラチェツチングと締付け作業を行うには熟練する必要がある。

ナットなどに嵌合して手を放しても離脱することなくラチェツチングができるものとして、めがね型ラチェツトレンチがあるが、例えばパイプラインの接合部の締付けにはレンチをパイプラインの廻周からパイプを包囲するように差込むことができない場合は、前記のめがね型ラチェツトレンチは使用できない。

前述のごとく、従来公知の開口部をもつスパナ、スパナのジョウを一部改良しラチェツチング可能を目指したスパナおよび開口型のめがね型ラチェツトレンチのいずれもが、迅速かつ円滑なラチェツチングと多目的な締付け作業への対応ができない欠点を持つたものである。

本考案は前記の欠点を改善したラチェツチングスパナを頭部に装着したトルクレンチに関するもので、実施例を同図について説明する。

第1図、第2図、第3図、および第4図はいずれも本考案の実施例を示すもので、1は一部部に固定ジョウ1'を形成

し把手部材 2 を或程度回動可能にヒンジピン 5 で軸着した締付部材で、固定ジョウの一端には、ナットなどの連接する 2 面 9、および 8、に当接する 2 面 1、および 1、とこの 2 面の間に適当な深さをもつ凹面 1、を形成してある。ナット 8 を締付ける状態において、前記のナットの面 9、に平行な面 9、および 9、に平行な面 9、およびこれに連接する面 9、に当接する面 9、および 9、および 9、とこれらの面の間にあつてナットの頂角部に対応する部分に適当な深さをもつ凹面 3、および 3、を形成した回動ジョウに設けたみぞ 3、を締付部材 1 に嵌合させ、或程度回動可能に軸 4 で軸着させてある。回動ジョウ 3 の一端部 3、を固定ジョウ 1、の一端面 1、から突出させここに同軸した軸 7 と締付部材の一部 1、を前記回動ジョウの突出部 3、と同様に突出させ、この部分に設けたみぞ 1、を貫通する如く同軸した軸 8 との間に引張りばね 8 を張設せしめてある。

ナットにスパンを嵌合しない場合は第 1 図に示す如く回動ジョウ 3 は引張りばね 8 の張力により端部 3、は、締付部材 1 の突出部 1、の方に変位し、他端部 3、は軸 4 を中心として固定ジョウ 1、の方に回動し、一端面 3、が、固定ジョウの段部 1、に当接して止まつている。このときの回動ジョウ 3 の面 3、とこれに対向する固定ジョウ 1、の面 1、との面間隙り寸法 A、はナット 8 の対辺間寸法 A、よりやや小さくしてある。

ナットにスパンを嵌合する場合は第 2 図に示す如く、回動ジョウの先端部 3、と固定ジョウの先端部 1、をそれぞれナ

ット3の面3。と3。に当接した後、スパナをナットに押し込むようにすれば、ジョウの先端部はナットの頂部を超越し、第3図の如く回動ジョウをよび固定ジョウの面3。、3。、3。と1。をよび1。はナットの面3。、3。、3。、3。をよび3。に引張りばね3で圧接される。

() このとき回動ジョウの先端3。と固定ジョウ1。の先端1。との間隔は最小のときナットの対辺間寸法A。で、最大でナットの対向する頂角間の寸法よりやや小となるが、いずれの場合でもジョウ3の回動は支障なく行われるよう配電されている。

第3図に示す矢印の方向に把手部材を回動すればナット3は回動ジョウ3と固定ジョウ1。に把持されて回動されるが、回動ジョウ3は引張りばね3でたえずナットに弾圧されるので離脱することなく締付け動作を行うことができる。

() 第4図に示す矢印の方向に把手部材を回動すると、固定ジョウの面1。と回動ジョウの先端3。との距りはたえずナットの対辺間寸法A。より大きくなるように、回動ジョウの一端部3。が締付部材1の段部1。に当接して限定するのでナットの中心3。と軸4との間隔は、第3図におけると同様であるから、回動ジョウの先端3。と固定ジョウの先端1。との間隔がナットの頂角間寸法より大きくなり、スパナがナットから離脱することはない。

本考案におけるラチェツチングスパナ付トルクレンチは、一例として前述の如き構造であり、管状部材の接合部の締付けは第2図の如くバイブラインに直角にトルクレンチを当て

押し込めば、第3図の締付可能な状態にセットでき、ラチェツタングもスパナがたえずナットに密着して離脱することはないので、狭い作業場所での迅速かつ正確な定トルク締付作業を可能にしたものである。

4 図面の簡単な説明

第1図は本考案にかけるトルクレンチの一例を、把手部材の一部を欠切して示すもので、ラチェツタングスパナをナットに嵌合していない状態、

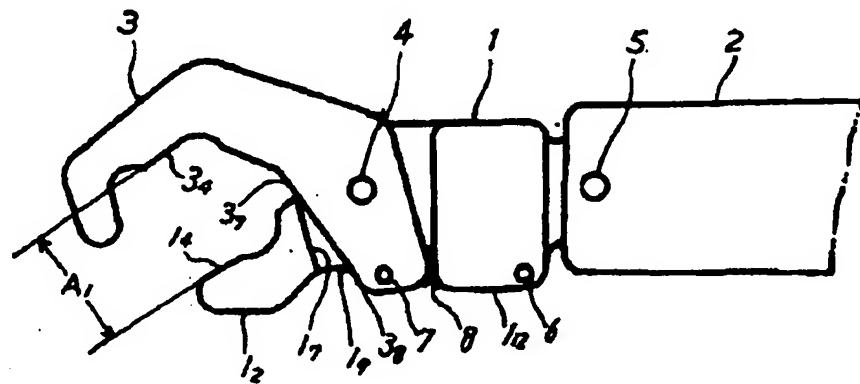
第2図はスパナをナットに押し込む状態をトルクレンチの一部を欠切して示し、

第3図は、スパナをナットに嵌合し終り、締付ける状態を示し、矢印は把手部材にかける手力の向きである。

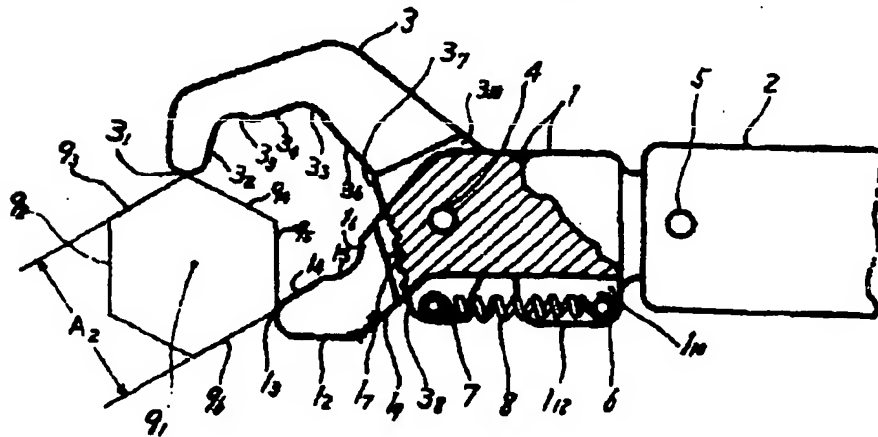
第4図は、把手部材に矢印の方向に手力をかけラチェツタングさせる状態をトルクレンチの一部を欠切して示す説明図である。

訂正
第4図

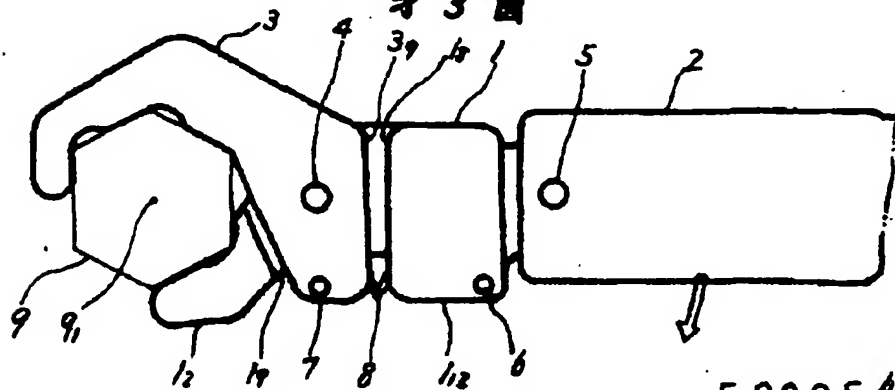
才 1 圖



才 2 圖



才 3 圖

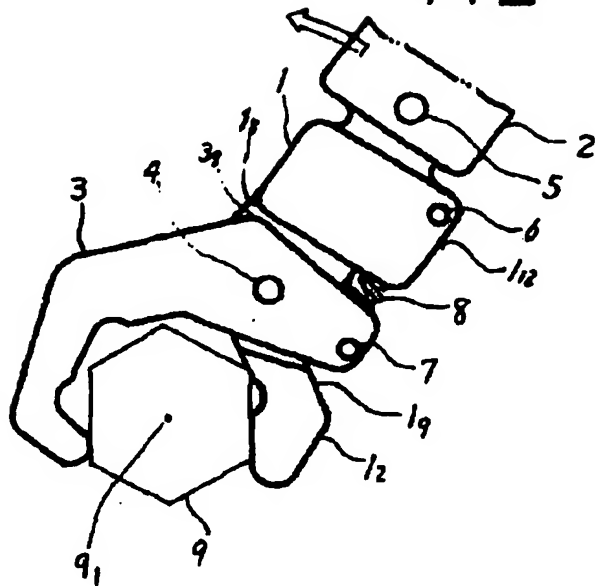


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出願人

株式会社 中興製作所

第4圖



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土庫人

東京金柱 中村製作所

Publication of Unexamined Utility Model Examination Showa 52[1977]-56695

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Government of Japan. Revenue stamp. 3,000 yen.

Application for Utility Model Registration (1)

October 22, 1975

TO: Hideki Saito, Commissioner of the Japan Patent Office

1. Title of the Device

Torque wrench with ratcheting spanner

2. Creator of Device

Name: Seichi Miyazaki

Address (location): 2-12-2 Asahi-cho, Machida-shi, Tokyo-to

3. Applicant for Utility Model Registration

Name (title and name of
representative in the case
of a corporation):

Nakamura Manufacturing Corporation

Representative: Hareshi Ishimori [seal illegible]

Address (location):

4-4-16 Minami-Shinagawa, Shinagawa-ku, Tokyo-to

Postal code:

140

4. Catalog of Attached Documents

- | | |
|-------------------------|-------------|
| (1) Specification | 1 copy |
| (2) Diagrams | 1 copy |
| (3) Copy of Application | 1 copy |
| (4) (| ___ copies) |

[seal] Formality check

[seal] Kitazawa

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Specification

1. Title of the Device

Torque wrench with ratcheting spanner

2. Scope of Utility Model Registration Claims

A torque wrench with ratcheting spanner, wherein a fastening member is attached by a shaft such that it can turn circularly to a certain extent at the end of a handle member, a fixed jaw 1₂ that has one surface 1₄ and an concave surface 1₅ that is continuous with the former is formed on one end of the fastening member, the fixed jaw is latched by a shaft such that it can turn circularly to a certain extent on a groove 3₉ that is provided on a turning jaw 3 that continuously forms respective concave surfaces 3₃ and 3₅, between the surfaces 3₂ and 3₆ that form 120 degree angles respectively with a surface 3₄ that is roughly parallel to the one surface 1₄ of the above-mentioned fixed jaw, and a tension spring 8 is stretched between the shafts 6 and 7 that are fixed to parts 1₁₂ and 3₈ which are the protruding parts in the above-mentioned fixed jaw and the turning jaw from the side surface 1₉.

3. Detailed Description of the Device

The present device relates to the structure of a torque wrench on which a ratcheting spanner is attached.

Torque wrenches that have a spanner composed of two fixed jaws on one end of the fastening member are well known, but in order to carry out so-called pre-fastening of bolts or nuts, it is necessary to disengage the spanner from the nut, etc., once a turning angle of a certain extent has been imparted to the nut, etc., from the initial position, and then the action of fitting the spanner to the nut needs to be repeatedly done so that a turning angle of a certain extent can again be imparted to the nut, and thus rapid fastening cannot be done and given this there is the drawback that arises from the relative position relationship of the nut and spanner in the event that it is not possible to impart final fastening torque accurately to the nut.

As far as items aiming at improving the above-mentioned drawback of fastening operation are concerned, there have been many proposals. Some have a suitable escape part such that appropriate ratcheting is possible on the spanner fits to the nut of the fixed jaw, but during ratcheting it is necessary to operate the spanner so that center that is located between the two opposing fixed jaws of the spanner are displaced to a certain extent from the center of the nut, etc., that is, the spanner is tilted and when there is a lot of operation the spanner is disengaged from the nut. It is necessary to carry out fastening by refitting the spanner to the nut, and thus it is necessary for the operator to be well trained for smooth ratcheting and the fastening operation.

As for items that fit to the nut, etc., and with which ratcheting is possible without its disengaging even if one loses one's grip, there is something known as a spectacle type ratchet wrench, but in the event for example that it is not possible to insert the wrench in such way that the pipe is surrounded from the end of the pipeline in the fastening of the joint of pipelines, it is not possible to use the above-mentioned spectacle type ratchet wrench.

As noted above, spanners that have a conventional, well known opening part, spanners that improve the jaw of the spanner and aim at making ratcheting possible, and closed hole, spectacle type ratchet wrenches all suffer from the drawback that that cannot be applied to rapid and smooth ratcheting and multipurpose fastening operations.

The present device relates to a torque wrench that improves the above-mentioned drawbacks and on which a ratcheting spanner is attached, and an explanation of the embodiment thereof is provided with reference to the diagrams.

Figure 1, Figure 2, Figure 3 and Figure 4 all show an embodiment of the present device. 1 is the fastening member on whose end a fixed jaw 1₂ is formed and that attaches a handle member 2 with a hinge pin 5 so that it can turn circularly to a certain extent. A concave surface 1₅ that has an appropriate depth has been formed between the two surfaces 1₆ and 1₄ that are in direct contact with the two surfaces 9₅ and 9₆ to which the nut, etc. is joined at one end of the fixed jaw. In a state where the nut 9 is fastened, a groove 3₁₀ that is provided on a turning jaw, on which surfaces 3₂, 3₄ and 3₆ that are in direct contact with a surface 9₂ that is parallel to the surface 9₅ and a surface 9₃ that is parallel to the surface 9₆ and a surface 9₄ which is continuous with the surface 9₃ of the above-mentioned nut are formed, and concave surfaces 3₃ and 3₅ with suitable depths are formed on the portion that corresponds to the apex part of the nut between these surfaces, is fitted to the fastening member 1 by a shaft 4 such that it can turn circularly to a certain extent. One end 3₈ of the turning jaw 3 is protruded from one side surface 1₉ of the fixed jaw 1₂, the shaft 7 that is attached fixedly here and one part 1₁₂ of the fastening member are protruded to the same side as the protrusion 3₈ of the above-mentioned turning jaw, and a tension spring 8 is stretched between this and a shaft 6 that is attached fixedly in a manner that it passes completely through a groove 1₁₀ that is provided on this portion.

In the event that the spanner is not fitted to the nut, as shown in Figure 1, when it comes to the turning jaw 3, the end 3₈ is displaced in the direction of the protrusion 1₁₂ of the fastening part 1 by the tension of the tension spring 8, the other end 3₁ moves circularly in the direction of the fixed jaw 1₂ with the shaft 4 at the center, and one end surface 3₇ comes into direct contact with the step part 1₇ of the fixed jaw and is stopped. At this time, the surface [illegible] dimensions A₁ between the surface 3₄ of the turning jaw 3 and the surface 1₄ of the fixed jaw 1₂ that is opposed to the former is a bit smaller than the dimension A₂ between opposing sides of the nut 9.

In the event that the spanner is fitted to the nut, as shown in Figure 2, if the tip part 3₁ of the turning jaw and the tip part 1₃ of the fixed jaw are put into direct contact respectively with the surfaces 9₄ and 9₅ of the nut 9, and after which if the spanner is pressed into the nut, the tip parts of the jaws surpass the apex parts of the nut, and as shown in Figure 3 the surfaces 3₂, 3₄ and 3₆, and 1₆ and 1₄, of the turning jaw and the fixed jaw are pressed into contact by the tension spring 8 to the 5 surfaces of the nut 9₂, 9₃, 9₄, 9₅ and 9₆.

At this time, the gap between tip part 3₁ of the turning jaw and the tip part 1₃ of the fixed jaw 1₂ is the same as the dimension A₂ between the opposing sides of the nut when a minimum and slightly smaller than the dimension between the opposing apex parts of the nut at the maximum, but in either case consideration has been given so that the turning of the jaw is carried out without any hindrance.

If the handle member is moved circularly in the direction indicated by the arrow shown in Figure 3, the nut 9 is held and turned by the turning jaw 3 and the fixed jaw 1₂, but since the turning jaw 3 is constantly clamped down to the nut by the tension spring 8, it is possible to carry out fastening without it being disengaged.

When the handle member is moved circularly in the direction indicated by the arrow shown in Figure 4, the distance between the surface 1[illegible] of the fixed jaw and

the tip 3₁ of the turning jaw is constantly limited since one side part 3₉ of the turning jaw comes in direct contact with the step part 1₈ of the fastening member 1 so that the distance does not become larger than the dimension A₂ between the opposing sides of the nut, and the gap between the center of the nut 9₁ and the shaft 4 is the same as that in Figure 3, so the gap between tip part 3₁ of the turning jaw and the tip part 1₃ of the fixed jaw does not become larger than the dimension between the apex parts of the nut, so that the spanner does not disengage from the nut.

The torque wrench with a ratcheting spanner in the present device has a structure like that described in the foregoing as one example thereof, and in the event of the fastening of the joining of a pipe member, if as shown in Figure 2 the torque wrench is applied perpendicularly and pressed into a pipeline, it can be set in a state in which the fastening in Figure 3 is possible, and when it comes to ratcheting, the spanner is constantly closely attached to the nut and does not disengage from it, so rapid and accurate fixed torque fastening operations in a narrow operating space are enabled thereby.

4. Brief Description of the Diagrams

Figure 1 shows one example of a torque wrench in the present device, with a portion of the handle member omitted, and is a state in which the ratcheting spanner has not been fitted to the nut.

Figure 2 shows a state in which the spanner has been pressed into the nut, with a portion of torque wrench omitted.

Figure 3 shows a fastening state in which the fitting of the spanner to the nut is completed, and the arrow shows the direction of the manual force that is applied to the handle member.

Figure 4 is an explanatory diagram that shows a state in which manual force is applied to the handle member in the direction of the arrow to perform ratcheting, with a portion of torque wrench omitted.

[margin] Two characters corrected. [seal illegible]

Figure 1

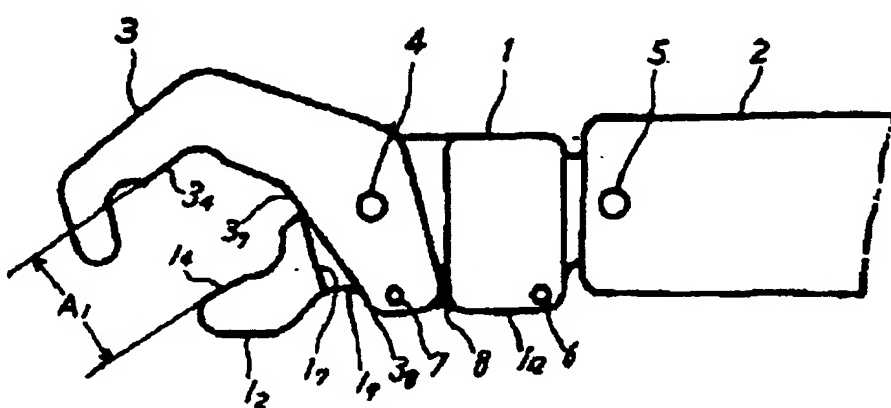


Figure 2

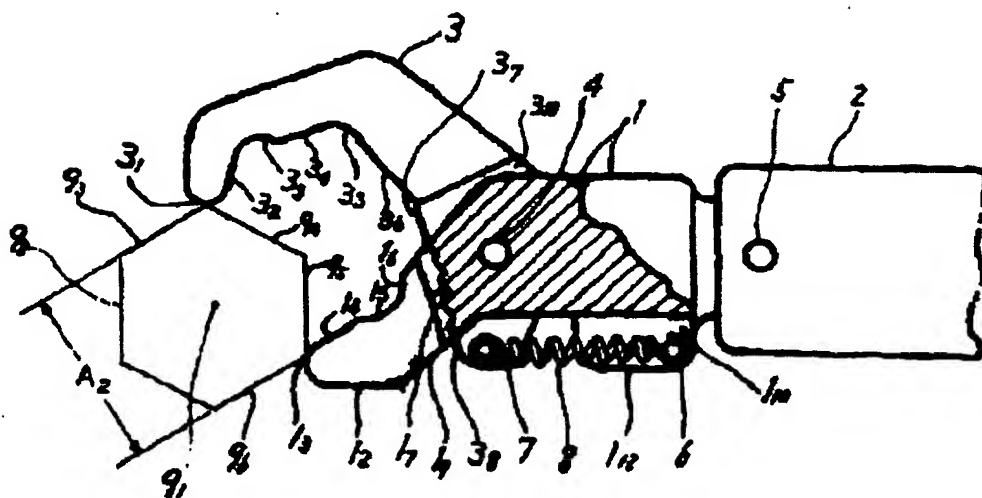
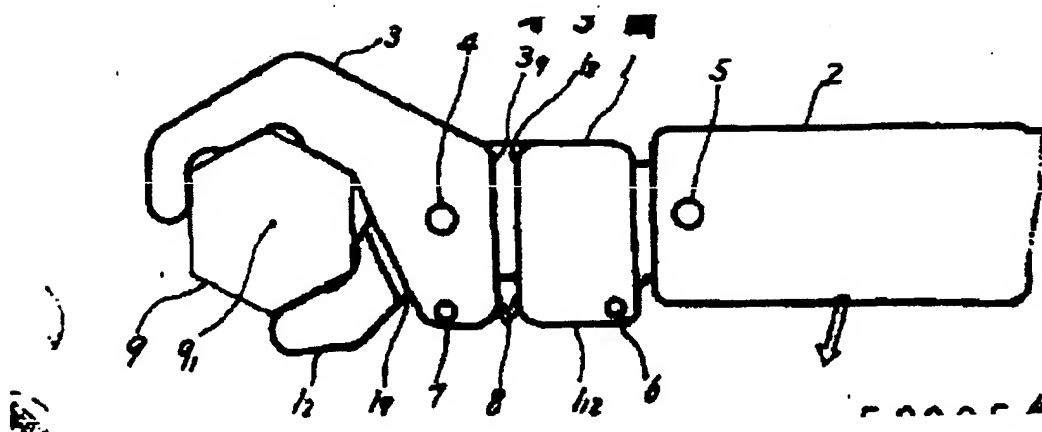
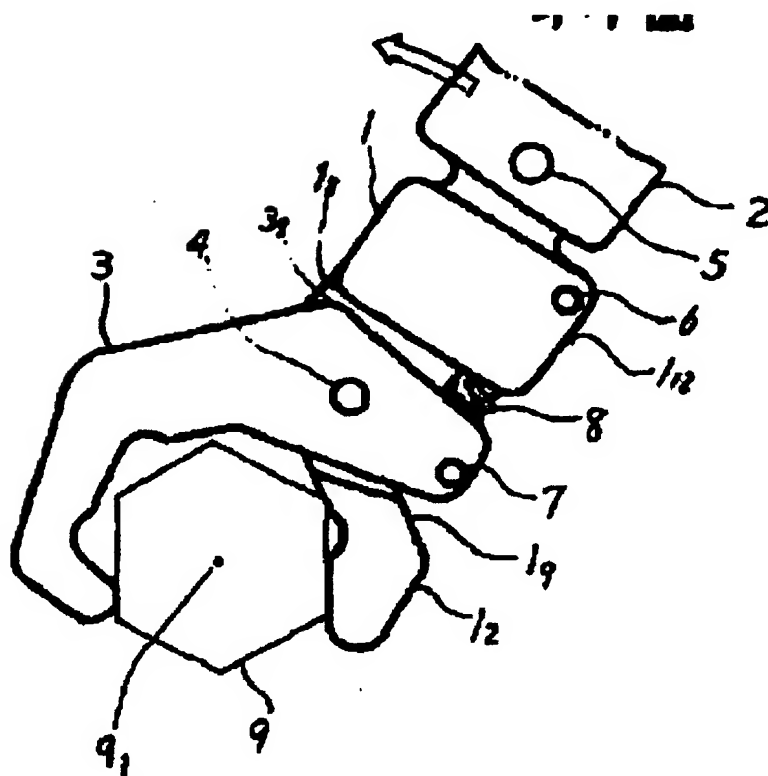


Figure 3



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Applicant
Nakamura Manufacturing Corporation

Figure 4



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Nakamura Manufacturing Corporation

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